Display Device

This invention relates to a display device. In particular, but not necessarily, it relates to a device for displaying advertising or promotional material or a point of sale display device.

According to the present invention there is provided a display device comprising a plurality of parallelepipeds arranged in a stack, each parallelepiped having a resilient means for urging it from a closed position, in which it lies generally flat, to a fully opened position, the structure being foldable from a first position at which the stack of parallelepipeds are fully open to a second position at which they are fully folded.

The stack may, but need not necessarily, be mounted upon a base, which may comprise a flat sheet.

The device preferably includes a foldable sheet which is hingedly attached to the base and connected to a face of the stack such that in the first position the sheet is substantially planar and in the second position the sheet is flattened concertina fashion, the sheet bearing a desired image, such as an advertising image, on its main face.

Each parallelepiped preferably includes one or more members, which bear at least part of the resilient means, and define the fully opened position. This may be one or more diagonally disposed members fixed to the junction between one adjacent pair of panels of the parallelepiped and adapted to impinge towards the diametrically opposite junction when the parallelepiped is fully opened.

Each parallelepiped may alternatively be formed of two bodies.

In a preferred embodiment, each of these is formed of a single elongate sheet having end portions which extend towards each other when the sheet is folded and between which

the resilient means extend, so that when the end portions abut, the body forms a right-angled triangle, or other desired shape, in cross-section.

The second body is inverted and its respective end portions affixed (eg by rivets) to the respective other end portions of the first body.

The resilient means is preferably one or more elastic bands or similar, located appropriately.

Preferably, one of the end portions includes a tongue which extends through a slot in the end portions of the other body and abuts the end of the slot when the bodies are fully closed.

In a preferred embodiment, there are five parallelepipeds.

According to the invention, there is further provided a blank comprising a sheet adapted to form the stack of parallelepipeds as defined above or a series of blanks forming one or more parallelepipeds or bodies.

The structure is preferably at least 50 cm high when erected. It may be over 50 cm high or over 100 cm high.

In one example comprising five parallelepipeds, each parallelepiped has a length of above 21 cm, so the height of the device when fully erected is about 105 cm.

In a further aspect, the invention comprises a display device comprising any one or more of the novel features or combination of features disclosed herein.

An embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 shows the structural portion of an ornamental device;

Figure 2 shows on of the parallelepiped structures of the device;

Figure 3 is an explanatory diagram;

Figure 4 shows the device of Figure 1 in a partly folded position;

Figure 5 shows a blank for constructing part of the structure of Figure 1;

Figure 6 shows a blank for constructing part of an alternative structure;

Figure 7 shows part of the alternative structure partially erected;

Figure 8 shows part of the alternative structure; and

Figure 9 shows the region labelled as '900' in Figure 8.

The following description is of a display device. The invention is, of course, not limited to a display device structure.

Referring to Figure 1, a display device, in the form of a point of sale display device, is made of cardboard, paper or a similar material and comprises a base 1. A rectangular planar sheet 2 is attached to one end of the base 1 to extend upwards from the base. Sheet 2 includes a plurality of transverse fold lines 3. A stack of parallelepipeds 4 is mounted on base 1 to lie against sheet 2. Alternatively, base 1 and/or sheet 2 may be omitted in certain embodiments.

The view shown is intended to be a rear view in practice, and the other side (the front side) of sheet 2 will bear a decorative feature such as an advertising image, picture and may be cut to suitable shape as desired (ie need not be rectangular). This will form the display element of the device, in which case the stack 4 forms the support structure. If sheet 2 is omitted, the picture or other material can be affixed onto the rear faces of the parallelepiped stack. Many methods of affixing an image to a sheet, or of cutting a sheet to a particular shape, are well known. In one example, the picture or image and/or shape may be of a bottle, bearing a particular branding, for example.

The parallelepiped stack comprises, in this embodiment, five parallelepipeds 4a to

4e, stacked one on top of the other. Figure 2 shows one of these. As shown, the structure comprises a front and back panel 5, 7, a top panel 8 and a bottom panel 6. Panels 6 and 8 are always parallel to each other, as are panels 5 and 7. The structure is open at the sides. A diagonally disposed member is fixed to the junction between panels 6 and 7 and is of such a length that it extends to the junction between planes 5 and 8, when the parallelepipeds is erect as shown. It is, however, not connected to this latter mentioned junction. Each parallelepiped may be formed in one piece, having four transverse folds for folding upon itself, or may be formed in two or more pieces. Diagonal portion 9 may be provided with one indent 10 along each of the open sides of the parallelepiped. A resilient means, such as an elastic band, is mounted by means of holes (not shown) in the device to lie in a rectangle towards the periphery of the diagonal member 9. As shown in Figures 1 and 2, the band is preferably arranged to lie on top of the diagonal member 9 for half the length of on side and then to pass through indentation 10 to lie underneath it along the other half of the member. It then passes along the back of a plane of the parallelepiped and comes again, down the opposite side of the a diagonal member, crossing sides at the indentation. Passing the elastic band through the plane of the diagonal member at the indentations allows a more even force to be distributed upon the diagonal member and prevents buckling of this.

As shown, the band passes along the junction of plane 5 and plane 8. Thus, if a downwards force is applied to plane 8, as shown in Figure 3, then the angles between the panels of the parallelepiped will change, and one end of the diagonal member 9 will be drawn away from the junction between planes 5 and 8. The elastic band, which is connected at or near the two diametrically opposite lines extends. It therefore provides a resilient force tending to urge the planes back into the erect parallelogram disposition shown in Figure 2. It will be appreciated that the structure can be further compressed against the resilient force, until plane 8 lies virtually superimposed upon plane 5 and a substantially flat structure is obtained.

Alternatively, the resilient means (such as elastic bands) may be otherwise located

or disposed on the diagonal portions to achieve the same resilient erecting effect. The diagonal portion need not have the indents. They may be provided with through holes in any desired location, or other means for providing location for elastic bands or other resilient means.

Referring briefly back to Figure 1, it is seen that the diagonal portions of adjacent parallelepiped structures extend in generally opposite directions to one another. That is, they alternatively face to the right and to the left in the figure.

In use, the structure is folded concertina fashion, as shown in Figure 4, perhaps to fit into a storage pouch or envelope. Firstly, the lower most portion of sheet 2, 2a, is hingedly folded with respect to base 1. This pushes the adjacent side panel of parallelepiped 4a to the position shown in Figure 4. Portion 2b can then be folded back as shown in the figure, and so on until a concertina structure is formed as shown. Downward pressure upon the top most part of the structure serves to almost flatten the structure so as to be easily portable. Note that the elastic bands have been omitted from Figure 4 for clarity but, in the folded position will be resiliently urging the structure into an opened position against a force exerted by pushing/holding the parts together. Upon withdrawal from the pouch, or release of pressure holding the structure closed, the elastic bands 11 urge the structure into its fully opened, form shown in Figure 1, where the image on the front of sheet 2 can be viewed. Thus, the invention provides a convenient method of obtaining a relatively tall and extensive display from a structure which can fit into a relatively small pouch, or alternative easily be hand carried.

As will be appreciated, more or less than five, for example two, parallelepipeds may be used and these may be of any suitable size, dependent upon, inter alia, the size of envelope. The height of one embodiment, up to the top of sheet 2 is, as described, about 100 cm but any other height may be constructed. For example, a fold up 'bottle' shape may be made which fits into a storage pouch but extends to form an erect display.

Although each of the parallelepipeds may be separate, it is preferred to form the entire stack from one blank. Figure 5 shows a blank which is suitable for this. The blank is divided lengthwise into five columns of equal length and widthwise into six rows, the outer two rows being of a width equal to that of the diagonal portions of each parallelepid and the central four having a width equal to the side and top and bottom panel portions. Slots 10 are provided at the junctions between the end most rows and each of the columns approximately half way down and elongate in the row wise direction. These correspond to indentations 10 in Figure 1. A plurality of spaced holes 12 are also provided as shown in Figure 5.

To assemble the blank, it is first cut along each column along the solid line, leaving the dot-dashed vertical lines12 uncut. Dabs of glue or other adhesive material are then applied to the four positions indicated by hatching 13. Subsequently, starting from the right hand side of the figure, the right most column is folded upon itself to produce a parallelepiped structure having four panels forming a parallelogram in cross-section and a diagonal member formed by the end most portions of the column being laid superimposed and adjacent one another. The entire parallelepiped structure is then hingedly folded at line 12 and glued by means of adhesive 13 to the next column. This next column is then folded upon itself to form a second parallelepid, which is again hinged at the next crease line 12 and adhered. This process is repeated for each column in turn until the final structure is obtained, which will be a stack of parallelepipeds as shown in Figure 1. This stack may then be adhered to base portion 1 and attached to foldable sheet 2. It need not be adhered along the entire surface of the foldable sheet connecting panels and perhaps may only be adhered at a top end of each parallelepid, or only at one or two portions of the structure. The elastic bands will, of course, be put into position through respective pairs of holes 14.

Figure 6 shows a blank for an alternative structure. This shows a blank to form each individual parallelepiped. In fact, in this example, each parallelepiped is formed from two identical members 60 and 61. These are formed from a rigid card or similar material in preferred embodiments. Each body 60 and 61 is a generally elongate planar body

comprising a number of longitudinal sections. There are two central generally rectangular shaped sections 62, 63. At the end of section 62 is a further section 64 of reduced length and which includes cut-out notches 65, 66 mounted at similar spacings along each edge. At the other end of part 63 is a further part 68 which also includes a pair of notches 69, 70 towards its end which is adjacent to bar 63. At the distal end of part 68 is a tongue member 71 which is connected at its central part to member 68 (and is of course an integral part of the entire body) but which has two free end parts 72 and 73 spaced slightly away from the remainder of body 68.

Also within portion 68 is a through slot 74 forming a rectangular cut-out. The width W of this is equal to or slightly greater than the width W of the part of tongue 71 which is attached to the remainder of part 68 but is usually, but not necessarily, less than the total width of each tongue. In use, the tongue 71a of one of the two bodies 60 and 61 shown in Figure 6 extends into slot 74 as will be described further below.

Each part also includes a number of holes 75 for riveting (otherwise affixing) adjacent components together.

In use each of the bodies such as 60 and 61 are folded about the hinge lines L1, L2 and L3 as shown in Figure 7.

As is shown in Figure 8, the parallelepipeds are formed by taking two bodies, such as body 60 and 61, inverting one of the bodies by rotating it through 180° and placing the second on top of each other such that part 68 of one body lies above part 65 of the other body, and similarly part 65 of the first body lies above part 68 of the second body. These parallelepiped are then connected to each, eg by rivets. The respective tongue portions 71, 71a of each body can then be inserted into the respective slot 74 of the other body. More correctly, the free end portions 72, 73 of each tongue are folded towards each other sufficiently that the tongue as a whole can then extend through the slot.

After this, the notch 67 of one body will be generally in register with notch 70 of the other body, and vice versa. Elastic bands are then applied between each registered pair of notches and the other notches on the same side, as is shown possibly more clearly in Figure 7. Note that only two elastic bands are required for the parallelepiped structure, not a separate elastic band for each individual generally triangular section. These elastic bands are sized so that they are in tension and pull the ends 65 and 68 together until they abut. At the abutment position, each tongue abuts the end of the slot in which it is mounted and the panels are shaped and sized so that this abutted (or fully closed) position, panels 62 and 63 lie generally at right angles to each other and therefore a similar effect to that of the first embodiment is seen. By stacking a number of these panels on top of each other, the plurality of parallelepipeds stack effect is achieved. Each of these may be riveted or otherwise connected to each other to form the stack. A front sheet or image 2 is then affixed to the stack as before and optionally a base 1 can also be affixed.

Figure 9 illustrates a little more clearly how ends 65 and 68 (and 65a and 68a) of the parts are abutted together by the action of the elastic bands, and how the tongues 71, 71a extends through the respective slots 74, 74a.

The diagonal members in this case are therefore formed from two layers each diagonal is formed from two ends of a body which move towards each other until their ends abut to form a strong diagonal cross member. The tongues and slots in which they extend provide for what will be repeatable and strong automatic erection under the resilient force of the elastic bands and which can resist shear and lateral movements. Other tongue/ channel configurations may be used. In other embodiments, the tongues/channels may be omitted. Each parallelepiped structure can, when it is not required to be erect, simply be folded by pressure at corners L2, bringing these corners towards each other and drawing each respective end 65, 68 of each sheet away from each other in a diagonal direction to achieve a folded disposition as in the first embodiment.

Although two embodiments have been shown and described, note that many other embodiments and variations are encompassed by the invention.